

COLONY OF MAURITIUS

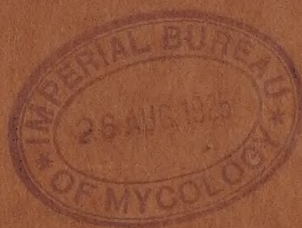
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# ANNUAL REPORT

ON THE

DEPARTMENT OF AGRICULTURE

FOR THE YEAR 1924



PORT LOUIS

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Rae. 1028  
14/25

THE HONOURABLE THE COLONIAL SECRETARY,

I have the honour to submit the report on the Department of Agriculture and on Agricultural conditions in the Colony for the year 1924.

### PART I

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#### AGRICULTURAL CONDITIONS IN 1924

The weather conditions experienced during the growing and harvesting seasons are summarised in the annexed tabular statement :

<i>Month and Year</i>	<i>Temperature</i>	<i>Rainfall</i>
1923		
November ...	Above normal	... Markedly above normal
December ...	Above normal	... Generally above normal
1924		
January ...	Below normal	... Above normal
February ...	Normal	... Generally above normal
March ...	Below normal	... Above normal
April ...	Normal	... Generally below normal
May ...	Normal	... Normal
June ...	Normal	... Below normal
July ...	Above normal	... Above normal
August ...	Above normal	... Considerably above normal
September ...	Below normal	... Below normal
October ...	Markedly below normal	... Markedly above normal
November ...	Below normal	... Below normal
December ...	Above normal	... Above normal

Weather conditions were thus markedly unfavourable during the harvesting and milling season. As a result although the tonnage in the field was, as a rule, excellent, the sucrose content of the cane was considerably below normal.

#### SUGAR INDUSTRY

The preliminary compilation of factory results for the crop of 1924 gave a total of 221 thousand tons evincing thus a reduction of approximately 7% on the normal.

The low lying districts have been especially unfavourably influenced by the weather conditions which prevailed during the winter season; thus in the upper district of Plaines Wilhems the extraction of sugar per cent of cane approximated to 10.6%, but in the North, it was, in the mean, about 10.2% and in the South 10.1%. The average extraction for the whole Island approximated to 10.2.

There is no doubt that this remarkable decrease in the extractions in the low lying districts is solely responsible for the pronounced deficit in the production of sugar for the year; in the upper districts, the outturn has been quite up to expectation.

The following figures give the preliminary results of the compilation of factory returns, compared with the total output for the seven preceding years.



*Sugar Production in Thousand Metric Tons*

Districts	1924 Preliminary results	1923	1922	1921	1920	1919	1918	1917
Pamplemousses & Riv. du Rempart	45.3	42.27	54.93	48.43	59.16	50.63	64.22	49.4
Flacq - - -	38.5	35.51	39.56	33.77	45.35	36.86	43.69	39.7
Moka - - -	31.0	31.34	29.39	28.04	37.58	35.24	34.70	31.7
Plaines Wilhems -	19.7	15.01	20.95	14.54	21.36	19.38	19.34	17.9
Black River - -	9.0	7.17	8.65	6.15	7.57	6.54	6.25	6.5
Savanne - - -	37.1	33.64	35.38	31.71	41.55	43.33	40.81	38.5
Grand Port - -	40.4	36.61	42.33	34.78	47.30	43.21	43.76	42.3
Total - - -	221.0	201.55	231.19	197.42	259.87	235.19	252.77	226.0

*Yield of Vesou Sugar.*—Of the estimated total of 221 thousand tons, 98% will, it is anticipated consist of vesou sugar while low products will probably reach about 2% of the total. The following table exhibits the progress in this connection for the past 10 years.

Year	%Vesou	Year	%Vesou
1915	82.60	1920	95.46
1916	80.23	1921	95.98
1917	89.85	1922	97.20
1918	94.50	1923	97.61
1919	94.45	1924	98.0 (Estimated)

*Factory work in 1924-25.*—Owing to unfavourable weather conditions during the ripening season, the average extraction of sugar per cent of cane was considerably below normal in 1924. The general figure for the whole Island is estimated at 10.2. Results for the previous decade are as follows:—

Year	Commercial Sugar extracted % Cane	Year	Commercial Sugar extracted % Cane
1915	10.83	1920	10.76
1916	10.30	1921	9.90
1917	10.62	1922	10.58
1918	10.95	1923	10.51
1919	10.42	1924	10.20 (Estimated)

*Factories conditions in 1924.*—The tendency towards centralization continues to make itself felt. At the end of the present campaign, two more factories will be closed, viz: *Plaisance* in Grand Port and *Bon Air* in Pamplemousses; in 1925 there will thus be 48 factories operating in the Colony, as compared with 59 in 1914. It is clear that as time goes by centralization to an increasing degree must be the rule, practically no factory in Mauritius as yet works at its full capacity and the stress of modern conditions is bound eventually to lead to the elimination of the weaker usines until all the more modern factories are working at approximately full capacity.

Improvements and amelioration to factory buildings and equipment were carried out on several Estates during the year. The importations of new Sugar Machinery during the year amounted to Rs. 2,172,721 while tramway material to the value of Rs. 1,168,259 was imported. In addition small quantities of machinery were manufactured by local foundries.

Of new processes tried one factory experimented very successfully with the Roussel process for the filtration of the whole of the juice after treatment with Sulphur and Lime.

Philippe filters have increased their popularity during the year and several factories have installed them for the first time this crop.

In two factories filters of this type specially designed for filtration in vacuo have been installed between the 3rd and 4th vessels of the quadruple effect and have proved successful in the reduction of scale in the last body and in the production of a clear clairce. The use of Phosphoric acid in the clairce is finding a wider application and a few factories have installed new settling tanks for use in this connection.

During the latter part of the year, Mr. R. G. W. Farnell, B. Sc., Chemist to the British Empire Sugar Research Association visited the Colony; Mr. Farnell was given laboratory accomodation at the Department of Agriculture and the Officers of the Department gave assistance with his work. He attended meetings of the Chamber of Agriculture, the Société des Chimistes, and visited a large number of factories. The result of Mr. Farnell's visits has been to attract increased attention to "Indicator methods" for determining the Hydrogen Ion concentration of sugar house liquors in the control of Sugar manufacture, (a point which had already been studied to some extent by the Sugar Technology Division of the Department of Agriculture during the previous crop) and to the question of the colloid contents of cane.



juices. As a result 10 factories have so far taken steps to procure the necessary equipment for the control of the acidity of their juices by the Hydrogen Ixon indicator method, the introduction of these methods if properly applied should assist in improving the quality of factory work and of the final product.

The Bach process was not operated during the year; it was found that although the process resulting in producing a sugar of a distinctly higher grade, the practice of selling sugar by standard grade precluded any increased return for the additional cost of the process. The possibility of introducing a special higher grade of sugar in addition to the existing standards has been discussed, but so far no action has been found possible. In this connection some interest attaches to the effort that will be made at the British Empire Exhibition in 1925 to bring specially good Mauritius white sugar to the notice of the grocery trade in England for direct consumption.

*Area under cultivation.*—At the end of 1923 the area under cane cultivation approximated to 164,100 arpents (171,200 acres) the decrease compared with 1923 being 2,300 arpents.

Under present economic conditions the area under cane will probably diminish further; figures for 1924 are not yet available, but it is anticipated that a further decrease of the same order as that seen in 1923 will be recorded in 1924, as many large Sugar Estates have reduced their area under cane cultivation.

Sales of proprieties by morcellement took place in four localities during 1924; it is estimated that the total area disposed of in this way is approximately 1,600 acres.

*Indian Cultivation.*—At the end of 1923 the area cultivated in cane by Indian Planters was estimated at 73,600 arpents (76,800 acres). This area reached a maximum in 1921 when 79,000 arpents of cane (46% of the total cane cultivation) were cultivated by Indians. In 1913 the corresponding figure was 54,900 arpents. With the fall in Sugar prices and the general diminution of the area under cane, Indian cultivation has also diminished but to a less extent than non-Indian. The proportion of Indian to total cane cultivation was in 1923, 44.4%.

Of the total area cultivated by Indians it is estimated that 51,000 acres represent lands owned by Indians, 20,000 acres represent lands occupied in morcellement of which the final instalments have not yet been paid, and 6,000 acres represent lands leased from Estates or Government on a yearly rental.

*Disposal of Sugar Crop.*—The Sugar Planters' Syndicate continued operations during the year and controlled more than 85% of the sugar production of the Colony. The mean prices at which the sugar crops for the years 1920 to 1923 have been sold are given below:—

1920-21	...	...	Rs. 50.68 per 50 kilos net
1921-22	...	...	12.05 do.
1922-23	...	...	13.86 do.
1923-24	...	...	18.94 do.

The mean sale price for 1924-25 will be approximately Rs. 12.50 per 50 kilos; it should however be added that in previous years the Mauritius exchange value for the Rupee closely followed that of India. In 1924-25 on the other hand the local exchange rate in relation to sugar sales averaged Rs. 14.50 to the Pound Sterling while the India exchange approximated to Rs. 13.30 for the Pound Sterling during the same period. Had the exchange followed that of India, the sale price would have been approximately Rs. 11.45 per 50 kilos.

Since the war and until the year just concluded the bulk of the sugar exportation has gone to Europe, the majority having been exported to Great Britain. In 1924 a considerable resumption of exportation to India occurred, due in the first place to the modification in the British preferential tariff which took place in 1924 and which caused the Indian market to offer greater advantages. Exportations of sugar to Europe and to India for the past three years have been as follows:—

<i>Crop of</i>	<i>Export to India</i>	<i>Total Export</i>
1922-23	- 267 tons	- 205,382 tons
1923-24	- 2,300 "	- 180,773 "
1924-25 (to date of writing)	- 138,816 "	- 178,451 "

*Conditions affecting the sugar Industry.*—Labour again proved the most important factor in the economic situation. The high prices obtained for the crop 1923-24 served once more to accentuate labour tension during the crop period of 1924. The Importation of labour from India, of which considerable hopes were entertained, gave disappointing results, partly by reason of the terms under which labour was imported and partly because the type of men imported were not satisfactory. By the end of the year many imported labourers had returned to India, and it seems probable that shortly all will be repatriated.

In December an Official Delegate of the Government of India, Mr. Kunwar Maharaj Singh, C.I.E., visited Mauritius for the purpose of reporting on the labour situation.

There is little doubt that sufficient labour exists in the Colony to meet actual needs; the apparent shortage is due to the wave of abnormal prosperity which has passed over the Island and which has rendered the labouring classes unwilling to work while the situation has been rendered more difficult by organisation among workers, which has not as yet found its counterpart in organisation among employers of labour.



Owing principally to this factor the cost of production of Sugar still remains at far too high a figure, and for the crop 1924-25 was on the average not below Rs. 11 per 50 kilos of Sugar.

*Instrumental Cultivation.*—Of all the directions in which economies of labour can be effected none is so important as the employment of tractors, ploughs and implements. In this connection a number of important advances were recorded during the year; among these is the formation of a definite organisation between a group of 10 estates for the purpose of providing expert guidance in relation to matters affecting the use of tractors and implements.

Ploughs and tractors to the value of Rs. 186,235 were imported during the year, the number of estates employing ploughs and implements has augmented, and there is a noticeable increase in the tendency on the part of Estate managers to try new forms of implements and to evolve modification of existing implements suited to local conditions.

The desideratum of a plough which will make a square sided furrow for planting, continued to attract attention, and by the end of the year one estate had actually imported a plough designed by Messrs. Mac Laren & Co., with this object in view. The performance of this implement will be watched with considerable interest.

Another estate has also imported an implement designed to do similar work but results have so far not proved satisfactory. On the other hand several estates have experimented with a modification of the Oliver double mould board tractor plough with extension pieces bolted to either side of the two breasts. This implement produces a wide deep furrow with a slightly curved bottom, in which planting is performed without any cleaning of the furrow by hand. Several hundreds of acres have this year been planted in this way, and in the writer's opinion procedure on these lines will probably ultimately constitute the solution of the problem. The round bottom furrow for planting is accepted as satisfactory in most cane producing countries, and it is difficult to see how or why insistence on a square sided furrow is likely to influence the ultimate yield of cane per acre, which is after all the principal criterion.

Much attention has also been devoted on certain estates to the possibility of finding some form of plough which would satisfactorily bury cane straw in fields that are being prepared for plantation. As a result the Mon Desert S. E. Co., during the year caused to be built an implement designed to perform this operation, based on specifications of a machine used on the Pepeeekes plantation in Hawaii, furnished by Mr. Louis Baissac, Sugar Technologist of the Department of Agriculture, and modified by Mr. Julien de Speville, Manager of Mon Desert and Mr. Henri Pitot, ploughing expert to the group of estates mentioned above. In its final form the implement consisted of:—An Oliver double mould board plough with extension pieces bolted to the top of the breasts preceded by a row of disc caulkers set at different heights which cut up the trash into short lengths, and thus facilitate ploughing in.

The implement was tried on a considerable scale at Mon Desert Estate and gave very satisfactory results.

For uprooting cane stools and preparing land for planting, local opinion has definitely accepted the two or three furrow disc plough as the most suitable implement, particularly on account of its ability to withstand the rather rough conditions which are met with in ploughing cane lands in Mauritius, and which are apt to cause considerable damage to shares or breasts in the mould board type of implement. At present the best plough for this kind of work has been proved to be Ransome's three furrow disc plough.

For ploughing out cane stools and making furrows for planting, Caterpillar tractors are practically exclusively employed, the No. 1 Cletrac tractor being used on the majority of estates. Three estates employ Renault tractors for this form of work, while one estate is now using a Sanderson wheel tractor with very satisfactory results, other wheel type tractors have not so far met with any great degree of acceptance, the types so far tried, viz: the Austin and the Fordson are in the general opinion of planters too light and underpowered, for work in Mauritius soils. It should however be mentioned that an Austin tractor working with a two furrow mould board plough has given fairly satisfactory results during two years at the Reduit Experimental Station for uprooting cane stools and furrowing.

It is believed by many however that heavier and higher powered wheel tractors may eventually prove more suitable than caterpillar tractors owing to the lower initial cost and smaller repairs bill. Experience with the Sanderson tractor on the single estate which has employed it so far tends to substantiate this view. Two other tractors of this type are expected shortly and the importation should lead to interesting results.

For weed eradication and deep cultivation in the interlines of growing canes, the No. 3 Cletrac tractor with an Oliver No. 36 cultivator is at present considered the most satisfactory combination. For keeping down weeds, various forms of horse hoe drawn by one or two oxen are now extensively employed. The use of oxen for this type of work necessarily causes it to be slow, but so far the employment of mules has been vetoed on account of their liability to Surra. If the campaign for the eradication of Surra at present being carried on by the Department of Agriculture gives the results hoped for, the employment of mules should eventually become possible once more and this would probably materially improve the situation.

The existence of large numbers of stones and boulders in cane fields in Mauritius is one of the chief difficulties in the way of the employment of tractors and implements. However many estates have set themselves to work to improve matters in this respect by rearranging



stones in rows or heaps suited to the work of tractors and ploughs, and it is a matter for astonishment in what apparently unpromising land, intelligent action in this respect has brought ploughing within the region of practical politics. In rearranging stones, tractors are also finding extensive useful application.

Another factor which has proved a source of difficulty in ploughing is the small size of the average cane field which has entailed much waste of time and fuel in the repeated turning of headlands. This defect is however being remedied slowly on these estates which have seriously taken in hand the solution of the problem by ploughing.

A third factor which influences the situation is that of obtaining really reliable labour for working with tractors and ploughs, and this has led to considerable loss of efficiency combined with much unnecessary wear and tear. In this respect also improvement is slowly making itself felt, and it is becoming realised that the employment of a good ploughman even though his wages may be high, is a real economy.

Exact figures for the cost of ploughing are so far not easy to obtain but available data indicate that at present the cost of uprooting cane stools and making furrows for planting averages from Rs. 15 to 25 per acre.

So far actual planting is still accomplished by hand but there does not seem any very obvious reason why one of the mechanical planting devices which are so widely used in Hawaii and also in Australia should not be successfully employed also. The same remark also probably applies to fertiliser distribution. In this connection mention may be made of a simple and ingenious device for applying molasses to canes, recently patented by Mr. H. Bourgault, Manager of Ferney Estate; it consists of a tank mounted on wheels of such breadth that they will conveniently pass between cane rows and is hauled by an ox; the molasses is delivered by two spouts the flow of which can be regulated according to the magnitude of the application which it is desired to make.

It may be expected that the more thorough aeration of the land due to improved cultivation will result in increased yields; data in this respect are still lacking but the Department of Agriculture has in hand a number of trials on some scale to test this point. It may be added that on at least one estate in the lower part of Savanne experience has proved that ploughing has had the effect of making the crop earlier, doubtless owing to the improved cultivation facilitating the removal of superfluous water and lessening the check due to chill from evaporation.

The present position in relation to implemental cultivation in Mauritius is full of interest, the developments which have taken place are very striking, and it is believed that in the end they will constitute the real solution of the labour problem of the place.

It is for this reason that they have been reviewed at some length.

*Irrigation of Sugar Cane.*—The area irrigated by the La Ferme reservoir remained approximately at 3,000 acres. Work on the La Nicolière scheme continued. This project is of very considerable magnitude, it will supply water for from 10,000 to 15,000 acres of land and will be comparable with some of the large scale irrigation undertakings of Hawaii. It comprises when complete three large storage reservoirs at La Nicolière, Midlands and Calebasses with a combined storage capacity of 1,115 million cubic feet of water, and an estimated total length of feeders and distributing channels of twenty miles.

The effect of this on the sugar producing regions of the West and North west will be considerable, but it must of necessity involve considerable modification of existing systems of agriculture.

Considerable progress was made on the second reservoir at Midlands; this is a work of considerable magnitude and is expected, according to information supplied by the Director of Public Works, to take from 8 to 10 years to complete. It is anticipated that during the current year some water will be impounded in the first reservoir at La Nicolière which will be delivered to the borderers of the Ville Bague Canal. So soon as work on the La Nicolière tank is complete, the making of distributories will be taken in hand and subsequently work on the third reservoir at Calebasses begun.

In so far as La Ferme is concerned the supply of water worked out satisfactorily, during the year, the reservoir was full by the commencement of March and remained full until the beginning of June. The full supply was maintained till June 30th and reduced by half from that date. By December 1st there still remained 102 million cubic feet in the reservoir, the total capacity of which is 416 million cubic feet.

The question of loss of water by seepage in feeders and distributories remains the principal problem in Mauritius as in most other countries where the distribution of irrigation water in earth channels is practised. To remedy this defect the Public Works Department has during the past two years undertaken the lining of certain sections with lime concrete and reports satisfactory results. In Hawaii similar trouble is reported as being dealt with by lining distributories with reinforced concrete slabs. Exact measurements of the losses occurring in this way are not available but they are estimated to amount probably to as much as between 50 and 60% of the flow in extreme cases. If to this is added losses which occur in earth channels on estates after the water leaves the Government distributories and before it reaches the fields, the total loss must be very large.

Work at the Irrigation Experiment Station was continued during the year and is now yielding significant results.



The five year period for which the scheme was inaugurated, terminates in 1926 and it is hoped that by the end of the present year the results which have been accumulated will enable a full report to be prepared. In the meantime it may be said that the most important point which has emerged is the fact that for every area of land there exists under definite conditions of irrigation a minimum quantity of water which must be delivered per acre, effectively to wet the entire surface. This factor varies greatly with different types of soil and also with the manner in which the water is applied, but, in any event, when the surface of the field has been effectively wetted all over, the top 12 inches or so of soil, retain water to their maximum capacity; if heavier applications than this minimum are given, the excess percolates to deeper levels; there appears however to be relatively little transference of such excesses from the lower levels to the upper, as evaporation and absorption by the roots of plants reduce the supply of the upper levels.

So far as can be seen at present under Mauritius conditions, the water content of the top layers of the soil begin to be reduced to a point capable of affecting absorption by the plant after one week's interval from the date of application; consequently it appears that the most satisfactory way of applying water is at intervals of about one week, giving at each application the minimum quantity of water the soil can take; larger applications at longer intervals merely entail loss of water and lead to reduced yields.

It is interesting further to record that the ideal held up for irrigation practice in Mauritius is the standard of yield obtained under irrigation in Hawaii which is in the region of 90 to 100 tons of cane per acre, after about two years growth. At the Irrigation Experiment Station at Medine working under the most favourable conditions, yields of 50 tons of cane per acre in virgins and 40 tons of cane per acre in first ratoons have been obtained during a total growth period of 25 months, i.e. about equal to the Hawaiian returns during the same length of time.

*Pests and Diseases of the Sugar Cane.*—*Phytalus Smithi* continues to be the most serious insect pest of cane and the total number of beetles destroyed during the season 1923–24 amounted to 52,573,000. In the Pamplemousses area, infection continued to be intense in the neighbourhood of Beau Sejour and Mont Piton with a smaller separate sub-focus at Bon Air. In spite of all efforts it has not been found possible so far to reduce the infection to reasonable bounds at these points notwithstanding the expenditure of much effort and considerable sums of money. It is curious that while the introduced parasite *Tiphia parallella* has established itself very satisfactorily elsewhere and is greatly assisting in the work of control, it has not up to the present succeeded as well at Beau Sejour. A fact which may have some significance in this connection is the unexpected observation that beetles from the Beau Sejour and Mont Piton areas are markedly smaller in size than others. This may be due to the drier conditions there prevailing and may possibly affect the ability of *Tiphia* to establish itself on its host.

Steps have been taken to order a consignment of the Insecticides Calcium Cyanide and Paradichlor, which are reported to have given satisfactory results against white grubs in other countries, notably Queensland.

The small separate infection at Joli Bois is showing signs of steady diminution and gives no course of anxiety; in July 1924 a separate infection was discovered at Beau Bois in the district of Moka. Subsequently surveys and campaign work against the pest were undertaken and revealed that the infected area was much larger than was at first supposed; in consequence it became necessary to establish a quarantine over a considerable portion of Moka district.

Other plant pests and diseases have not been markedly in evidence, there have been reported one or two minor appearances of Red Rot, Gumming and Smut. Much attention has been focussed during the year on questions in relation to Cane Mosaic. At present Mosaic does not exist in Mauritius; in January 1924 a small consignment of Coimbatore seedlings which had been obtained from India and were growing in the Reduit Nursery were noticed to have developed typical Mosaic; they were immediately uprooted and destroyed as were all the surrounding canes; it appears that these measures have fortunately eradicated the disease.

In the middle of the year accounts received from the neighbouring Island of Réunion indicated that Mosaic disease in a severe form probably existed in that Island; in view of the proximity of Réunion, and the large amount of intercourse existing between the two places, the Government of Mauritius, on advice of the Department and the Board of Agriculture decided to send the Botanist to Réunion to investigate matters. About the same time a request was received from the French Government for the loan of a qualified Officer to report on cane diseases in Réunion. The Botanist left for Réunion at the commencement of September and spent two months in that Island. His investigations showed that Mosaic existed to a considerable extent in Réunion particularly in the leeward districts and was responsible for very serious losses. As a result plant quarantine restrictions have been rendered more stringent. There is no doubt that the introduction of Mosaic in Mauritius would prove a very serious matter and would probably necessitate the abandonment of the practice of long ratooning locally practised. That the disease has not already gained an entrance is, I think, undoubtedly due to the quarantine restrictions on plant importation maintained by the Department of Agriculture during the past twelve years.



*Experimental Investigations in Relation to Sugar Industry.*—Research work in relation to the Sugar Industry has been continued during the year; the extensive series of experiments with varieties of cane have been continued on the eight experiment stations, while manurial, experiments have been conducted at Reduit, Médine and on two estates. The principal points at present being investigated are:—the effects of cultivation, Phosphatic manures, Lime, Molasses and Nitrogen. It is hoped that the investigations now in progress may have become sufficiently advanced by the end of the current year, to enable the results of these to be put forward in the form of a report. Experiments on the bud selection of canes on the lines laid down by A. D. Shamel have been continued by the Botanist, and the Sugar Technologist, while the Chemical Division has in hand a number of investigations on soil problems, including the results of the work on the soil survey which had been suspended for some years on account of calls on the time of the Staff in other directions; experiments have also been commenced on the losses which take place in the production of Fumier (Cattle pen manure) under Mauritius conditions. The results of the preliminary investigations carried out by the Divisions of Sugar Technology and Chemistry in conjunction with the Authorities of the Bacteriological Laboratory on the pollution of rivers by effluence from Sugar factories were submitted with the report of the Commission on this matter to Government.

Investigations were continued by the Botanical Division into the various fungoid maladies of cane in Mauritius, while the measurements of the rate of growth of canes and of their transpiration coefficients were continued. The important series of investigations in progress at Medine on irrigation of cane has already been mentioned.

#### SUBSIDIARY AGRICULTURAL INDUSTRIES

An interesting feature of the Agricultural situation has been the tendency towards the revival of interest in the possibility of developing Agricultural industries subsidiary to the production of Sugar. It is practically certain that the future of Mauritius is bound up in that of the Sugar Industry, but at the same time the evolution of subsidiary industries of importance is extremely desirable. During the war and the period of high prices immediately succeeding it, it was almost impossible to arouse any serious attention in the development of alternative industries; this was perhaps but natural; at the present moment however there is a distinct tendency in the opposite direction and prospects for serious efforts to develop subsidiary cultures are brighter than they have been for some years.

*Aloe Fibre.*—From July 1923 the market for Mauritius Hemp has been on the upward trend and reached a maximum of £ 48 per ton for the prime grade in the month of November. Quotations subsequently fell somewhat but remained firm in the neighbourhood of £ 47. The exports for the past nine years have been as follows:—

1916	...	...	...	7,118	Bales
1917	...	...	...	5,647	"
1918	...	...	...	1,974	"
1919	...	...	...	10,139	"
1920	...	...	...	3,500	"
1921	...	...	...	1,150	"
1922	...	...	...	3,120	"
1923	...	...	...	2,400	"
1924	...	...	...	4,987	"

The standard system of baling at present in vogue in Mauritius gives 4 bales to the metric ton.

During the year there was a considerable revival of interest in the Fibre Industry; owing to the decline in the price of sugar several factories were re-opened which had not worked for many years, and in July a Committee was appointed by the Governor, with the Director of Agriculture as Chairman, to report on steps which might be taken to improve the position of the industry. The Committee has not yet presented its final report but in the meantime, as a result of the initiative taken, efforts are being made to organise a Fibre Growers Syndicate on similar lines to the Sugar Syndicate, with a view to the co-operative handling and marketing of the crop, in conjunction with which a project for the establishment of a central Brushing, Grading and Baling Factory is being considered. There is no question that the Industry would greatly benefit from the establishment of such an institution, inasmuch as standardised preparation and grading would improve the market conditions for the produce, while close baling by means of hydraulic presses would enable important savings to be effected on freight.

In relation to Sisal some progress has also to be reported. In July the Corona Fibre Factory was removed to Plaine Lauzun and set up in the Government Sisal Plantation at that point. A reaping of 18 acres was effected and the produce decorticated by the Corona machine and shipped to England. It is hoped that the Government plantation at this point may eventually become the nucleus of an area planted by private enterprise for manipulation by the factory. At Grand Bay the Robey decorticator imported by Mr. Gaston Tyack was operated during the year. At this point there are some 450 acres of Sisal. The plant includes a Robey decorticator with automatic brushing and hydraulic baling plant and has up to the present given satisfactory results.



So far there appears on the whole to be good grounds for the belief that the cultivation of Sisal in the Colony offers considerable opportunities for expansion.

*Production of Alcohol.*—The production of Alcohol for the past nine years according to Treasury returns is as follows:—

1915-16	... 1,091,485 Litres	1920-21	... 1,900,000 Litres
1916-17	... 1,883,607 "	1921-22	... 1,749,994 "
1917-18	... 1,602,414 "	1922-23	... 496,237 "
1918-19	... 1,529,315 "	1923-24	... 523,892 "
1919-20	... 1,666,000 "		

Practically all the Alcohol produced is consumed locally as Rum, but the operation of the Liquor Licencing Law, which has now been in force for two years has produced a pronounced effect on the consumption of Rum.

It is to be regretted that no further progress can be reported in relation to the power Alcohol plant at St. Antoine. Developments on these lines are so obviously indicated that it is to be hoped that further attention may be directed to possibilities in this direction.

*Tobacco.*—Efforts to develop the tobacco Industry have been continued under the auspices of Government during the year. While the Tobacco grown under tax is only slightly over 12 acres the acreage grown under the permit system is at present 188 acres.

Of all the alternative industries to Sugar, Tobacco presents to my mind the greatest degree of promise. Up to recently, attention has been concentrated on the production of the type of Black Tobacco produced by the carotting process from the Tabac Bleu variety, which is extensively grown in Réunion and imported into Mauritius. As the result of careful experimentation, tobacco of this class fully equal to Réunion tobacco is now being turned out at the Tobacco Factory. Unfortunately the sale and distribution of Réunion Tobacco is in the hands of local interests and attempts to substitute Mauritius tobacco for it have evoked much opposition. The situation is rendered more difficult owing to the fact that for this type of tobacco, there is practically no alternative market. Consequently attention has been turned to the possibilities of producing a Tobacco which would find a market not only for consumption locally but also for exportation. A considerable number of experiments have been carried out by the Department of Agriculture on new varieties of Tobacco with distinctly encouraging results and by the end of the year, Government approval had been obtained for the despatch to South Africa of Mr. G. Corbett, Agricultural Superintendent, Rodrigues, for the purpose of making enquiries concerning the cultivation and curing of tobacco in the Union of South Africa, Rhodesia and Nyasaland. The position was summarised in a memorandum presented to Government by the Director of Agriculture in November in which proposals were made for further development. If the proposals mature it is hoped that they may pave the way for considerable developments in the Tobacco Industry, not only in Mauritius but also in the Dependency of Rodrigues where the need for established industries is very great owing to the rapid increase of population.

*Tea.*—The local Tea Industry continued in a languishing condition; in spite of the protection of Rs. 0.60 per kilo, the local produce cannot compete with imported Teas from India and Ceylon. Statistics of production are as follows:—

1888-97	... ..	5,000 kilos per annum
1898-07	... ..	32,000 "
1900-10	... ..	35,000 "
1911-15	... ..	38,000 "
1916-17	... ..	30,000 "
1917-19	... ..	32,000 "
1919-21	... ..	20,000 "
1922-24	... ..	25,000 "

The quantity imported yearly averages 180,000 kilos of which 160,000 come from Ceylon.

Up to the present no efforts have been made to develop an export trade in Tea popular opinion tending to the view that the crop will be unable to compete with Tea grown in other countries owing to a higher wages rates which at present prevail in the Colony.

*Coconuts.*—No great changes of importance occurred in this Industry, for which there is probably considerable scope for development. During the year 1924, 805 tons of Copra were imported from the Oil Islands (Dependencies of Mauritius) of which 746 tons were re-exported.

About 100 acres of Coconuts at Pointe aux Sables have now come into bearing as have also some small areas at Trou-aux-Biches, the nuts being consumed locally.

Some developments have taken place in the Southern part of Black River where plantations to the extent of about 50 acres have already been made and where further developments are in contemplation. It is anticipated that these areas may ultimately lead to the production of copra.

At present, Coconut growing is confined to the extreme littoral; it is believed however that apart from this, considerable areas of waste land exist, notably around Port Louis and in Black River which could quite well be developed in Coconuts; to test this point a small trial area has been established at Abercrombie and it is hoped to plant further trial areas elsewhere.



The crop appears to offer considerable possibilities inasmuch as it demands very little labour while the fears which are at times expressed regarding its liability to cyclone damage are probably exaggerated.

*Vanilla.*—The market for Vanilla firmed up considerably during the year, nevertheless, the industry did not show any particular development.

*Food Crops.*—While the cultivation of vegetables and Manioc is practically on the same level as in preceding years, the cultivation of Maize is still suffering from the competition of imported South African Maize. At the end of 1923 the total acreage under food crops was approximately 9,500 acres of which Manioc and Maize accounted for 2,000 and 2,500 acres respectively, and vegetables for 2,700 acres. But little change occurred in 1924; figures are not yet available but it is anticipated that the total area under food crops will evince a slight increase over the 1923 figures.

*Live Stock.*—The importation of cattle from Madagascar in 1924 numbered 12,873 head, a decrease of 603 on the corresponding figure for 1923. Of these animals 11,329 were imported for food and 1,544 for other purposes. The total value of the cattle imported this year is Rs. 707,875.—

The small local Stock Breeding Industry has continued to suffer vicissitudes mainly owing to the competition of Madagascar animals, which chiefly by reason of the low exchange for the Franc, have been currently sold at from Rs. 75 to Rs. 100 per head. Large numbers of draft animals of this type have been bought at these rates for cart and also to some extent for plough purposes; such animals are inferior both in size and resisting power to the bullocks raised by local breeders, but owing to various causes local breeders are unable to compete on these terms.

The question was considered during the year by the Local Stock Breeders Association and by the Board of Agriculture, and various proposals put forward for the assistance of the local Stock Breeding Industry; so far however without any tangible result. There is no doubt that owing to the abnormal situation in relation to exchange, the situation of the local Stock Breeding Industry has become very precarious, and this in time is bound to react adversely on the Agricultural Community when exchange reaches a more stable position. Meantime the considerable efforts made by breeders in the years immediately succeeding the war to improve their herds by means of the purchase and loan of animals of the Government Stock Farm are almost entirely discounted. The Government Stock Farm itself has again been run at a loss and at the sale of stock held in January 1924, receipts were very disappointing. The matter was considered by the Board of Agriculture during the year, which body advised that in view of the unstable economic situation and of the probability of the ultimate revival in breeding which will follow a restoration of more normal exchanges, the operation of the Farm should not be curtailed. This view has for the present been accepted.

Considerable interest has been manifested in Dairying, the erection of the new buildings at the Government Dairy at Curepipe especially representing an important advance. This Dairy has now been completed on modern lines; it comprises fifty cows, while the byres are provided with up to date fittings, including steel stalls for cows, stanchions & automatic water bowls; the handling of milk is carried out in accordance with the recommendation of the British Ministry of Health, the aim being the production of milk approximating to the grade A certified article.

The results in this direction have been most encouraging and demonstrate that the production of clean milk in Mauritius is well within the range of practical problems. Funds for the extension of the Dairy have been provided. The milk therefrom is supplied to the Civil Hospital, Port Louis and the Central Hospital, Candos. A small branch Dairy is also maintained in connection with the Government Farm at Reduit from which milk is supplied to the Moka Hospital, while the small dairy maintained by the Poor Law Department at Barkly Asylum continued to supply milk to the Lunatic Asylum and the Prisons. There are also a number of private Dairies now operating in the Colony, producing milk under improved conditions, and additions thereto are in contemplation. Advances in this direction mark a very welcome step towards the replacement in part of the abominably bad condition in relation to Milk supply through the agency of Indian cow keepers which exist throughout the Colony.

*Animal Diseases.*—There have been no outbreaks of animal disease of importance in the Colony during the year. In this connection interest centres particularly in the systematic campaign against Surra which has now been carried on since the end of 1922. The campaign has been rendered possible by the appointment of two whole time Stock Inspectors and by the utilisation of the part time service of two other Officers in the same connection. The plan of work adopted has been to divide the Island into sections, and the work over each section seriatim, examining large numbers of sample animals by means of blood smears regardless of whether they showed symptoms of disease or not. This course was decided upon as after long experience, it had become clear that the disease was maintained in the Island by means of carriers which showed no perceptible signs of the disease. So soon as a case is detected on cattle, quarantine is enforced with the help of the Police and the infected animal required to be treated within a delay of forty eight hours; if by the end of that time treatment has not commenced the animal is slaughtered



without compensation. For treatment, centres have been provided all over the Island with the co-operation of Estates and the Medical and Health Department; so soon as an animal is declared infected, the owner is notified of the nearest centre for treatment, and the treatment forwarded from the Veterinary Laboratory on payment of a fee of Rs. 12. The Soamin treatment has been remarkably effective in relation to Bovines, but is of little value in relation to Equines, consequently in the latter case compulsory slaughter is now required on notification.

The campaign is producing already striking results as the following data show:—

<i>Year</i>	<i>Number of animals examined</i>	<i>No. of infected animals detected</i>	<i>Percentage of infected animals on total examined</i>
1922	... November	December only	51 ...
1923	5,968	...	150 ... 2.5%
1924	5,959	...	37 ... 0.5%

At the end of 1921, the situation in relation to Surra looked extremely threatening; as the result of the campaign, which has revealed numerous cases acting as carriers which would otherwise not have been brought to light, the menace has been almost entirely mitigated, and the situation in relation to the disease is more favourable than at any time since it was first introduced. This is shown by the rapidly increasing number of horses and mules. There is no obvious reason in a limited area like Mauritius with a comparatively small livestock population, why this scourge which has been the cause of so much loss in the past should not, given a continuation of this policy, ultimately be eradicated.

Quarantine measures in relation to animals imported were maintained during the year; the establishment of the Animals Quarantine Station at Fort William has materially increased efficiency in this direction. The maintenance of rigid quarantine measures against animal importation is of considerable importance in view of the prevalence of dangerous stock diseases in India and South Africa and all importations of horned stock from these two places are now in addition to being provided with clear bills of health, required to undergo a period of six weeks quarantine "surveillance" before being released.

In relation to Rabies quarantine provisions were rendered more stringent during the year, and all dogs or cats imported into the Colony, following English practice, are now required to undergo six months quarantine, irrespective of whether they come from an area in which Rabies exists or not. The Colony has now been free of Rabies for 36 years and, in view of the existence of the disease in Madagascar, it is felt that no restrictions are too severe to insure against its reintroduction. In this connection, excellent quarantine kennels for dogs exist at Réduit. The Animal Diseases Prevention Ordinance was remodelled and codified during the year; the draft being ready for presentation to the Council of Government by the end of the year.

#### AGRICULTURAL EDUCATION

During the year the Mauritius Agricultural College continued its operations successfully; the buildings were practically completed by the end of December and arrangements made for the admission of new students. The details of the working of this institution are dealt with in a separate report. The completion of the organisation of this undertaking however marks a very important step towards the provision of systematised training for future planters and administrators, and affords definite provision in this respect which was previously largely lacking.

In relation to Agricultural instruction in Primary schools, the School Garden movement continued to make some headway, the total number of registered gardens being 18. The system of training Horticultural & Agricultural Apprentices carried on by the Agricultural and Forest Departments in co-operation was continued and extended during the year. No lectures were delivered to Elementary School Teachers and no arrangements have yet been concluded for the provision of definite agricultural training to students of the Teachers' Training College. In an Agricultural country such as Mauritius there is marked need for the further systematisation and extension of instruction in these directions and it is hoped that means may eventually be found for the linking together of the at present rather uncoordinated efforts into a compact well defined and coherent scheme of agricultural education for pupils of primary schools.

#### CO-OPERATIVE CREDIT SOCIETIES

Co-Operative Credit Societies continued to work under difficulties during the year and much trouble has been experienced owing to the excessive influx of capital into the Colony during the years 1919 and 1920, which led to an epidemic of reckless borrowing and lending which has had very unfortunate consequences. Signs are however not wanting that some improvement is taking place in this respect and it is hoped that with the return of more normal conditions, a healthier tone will, ere long supervene.

#### AGRICULTURAL SHOWS

Interest in Agricultural Shows was well maintained during the year, two shows organised by the Department of Agriculture one in the district of Flacq and one in Rodrigues took place, while the Société Horticole also organised a very successful Exhibition in October at Curepipe. The policy of holding small district Agricultural Shows is receiving considerable



support; these shows do good, inasmuch as they serve to bring to the front questions in relation to subsidiary industries and also afford a means of disseminating information respecting points of interest. A feature of the Flacq Show was a series of addresses on various topics delivered by Members of the Staff of the Department of Agriculture and by the Director of the Bacteriological Institute. Some discussion took place during the year with a view to the organisation of an exhibition on a larger scale to be held in Port Louis in 1925.

### RODRIGUES

Efforts to develop the Agricultural possibilities of this Dependency were continued during the year. The Agricultural Station at Oyster Bay and the Stock Farm were improved and extended. Experiments were carried out with a view to introducing the cultivation of new crops and the improvement of existing crops and schemes considered for the improvement of the Cattle Walk and the assistance of Local Stock Breeders. Two Pedigree large black pigs were introduced while the experiment on the raising of donkeys is giving most promising results. A Co-Operative Credit Society was also inaugurated at Trèfles during the year. In view of the increase in population in the dependency, the chief need consists in the establishment of an agricultural industry which will furnish a staple exportable commodity; in this connection tobacco cultivation appears to hold out great promise; at the end of the year in view of possible developments there and also in Mauritius, the Agricultural Superintendent, was despatched on a mission to investigate and report on methods of tobacco cultivation and curing practised in the Transvaal, Rhodesia and Nyasaland.

## PART II.

### WORK OF THE DEPARTMENT OF AGRICULTURE DURING THE YEAR 1924.

#### *Staff Changes.*

Mr. D. d'Emmerez de Charmoy, Assistant Director went on sick leave in December. Mr. C. A. O'Connor acted as Assistant Director during Mr. d'Emmerez's leave and Mr. Edwards as Entomologist.

Mr. C. A. O'Connor, Agricultural Instructor was appointed Chief Agricultural Officer in July.

Mr. N. Craig, M.Sc., (Durham) was appointed Lecturer in Agricultural Chemistry in the College of Agriculture with charge of the Chemical Division of the Department of Agriculture. Mr. Craig assumed duty in August.

Mr. W. H. Edwards, D.I.C., returned from Study leave in England and South Africa in October and assumed duty as Lecturer in Entomology and Zoology in the College of Agriculture, attached to the Entomological Division.

Mr. Y. Lefebure, Stock Inspector proceeded to South Africa on one year's study leave in February.

Mr. A. S. Clegg, Agricultural Superintendent, relinquished his appointment in May and returned to England.

Mr. E. Lesur, Officer in charge Medine Irrigation Experiment Station, was appointed provisional Agricultural Superintendent from the date of Mr. Clegg's departure.

Mr. J. de Pitray was appointed Officer in charge of the Irrigation Experiment Station in May. He relinquished his post in December and was succeeded by Mr. E. Colin.

Mr. E. F. Shepherd, B.S.A., Botanist and Mycologist proceeded to Réunion in September on special mission to investigate Mosaic disease of cane in that Island.

Mr. G. Jollivet was appointed Officer in Charge of the Government Dairy, Curepipe in May.

Mr. F. Giraud, Assistant Chemist went on sick leave in December, Mr. R. Laval, Scientific Assistant acted as Assistant Chemist.

Mr. G. Corbett, Agricultural Superintendent, Rodrigues, left for South Africa on special mission to study Tobacco cultivation in December.

Mr. E. Cartier, Ag. Overseer of the Dairy was appointed Officer in charge of the Abercrombie Nursery in May.

Mr. M. Valaythen, Asst. Overseer Royal Botanical Gardens was appointed Overseer in charge Curepipe Gardens in June. Mr. H. Baichoo was appointed Assistant Overseer, Royal Botanical Gardens.

Miss U. Bouloux resigned her appointment as Lady Typist in July.

Messrs. F. Blackburn and S. Peerbaye were appointed provisional Sixth Class Clerks in August and September respectively.

Mr. A. Pakeeree, Assistant Inspector, C.C.S., was promoted to be 5th Class Clerk in the Post Office in September, he was succeeded by Mr. W. Bourdet seconded for duty from the post of Sixth Class Clerk.

The work of the Department again developed very considerably; during the year a number of new lines of work were undertaken, while existing operations extended suitably in a number of directions. The growth of the Department has been noteworthy of recent years and it is satisfactory to be able to record that the efforts made appear to be meeting with a measure of appreciation from the planting body. The operations of the divisions are reviewed in the following pages.



## ENTOMOLOGICAL DIVISION

The Entomologist reports as follows :—

*Campaign against Phytalus Smithi.*—The results of the 1923–24 campaign were reviewed in a special report which was printed and distributed amongst those concerned. The number of beetles destroyed during the period was again slightly greater than in the preceding year, the capture showing an increase of 9 millions over that of the previous season.

*Tiphia Parallela.*—A series of experiments were carried out with a view to investigating the reasons for the scarcity of this parasite in certain parts of Pamplemousses. Although interesting data have been compiled, it is insufficient to lead to any definite conclusions as to the causes of the scarcity of this parasite at certain points in the infected area. These experiments will be continued next season.

At Joli Bois, *Tiphia* is steadily increasing and judging from the results of the campaign there are good reasons to believe that the wasp is pursuing its natural role.

*Tiphias* were distributed in the Moka district, at Circonstance and Beau Bois Sugar Estates where *Phytalus* was discovered. A good number were also liberated at Beau Séjour in Pamplemousses. Early in May, *Phytalus* larvae were detected in cane fields at Beau Bois and Circonstance in Moka.

The infected area was subsequently delimited and proclaimed in quarantine. The results of the campaign which immediately started will be embodied in the usual Departmental report on the Control of *Phytalus Smithi*.

*Other Insect Pests.*—Red Ants "*Solenopsis geminata*."—Experiment respecting the control of this pest were continued with the result that it was found possible to cope with the pest by the use of an insecticide :—Kerosene Creoline Emulsion—the formula of which has been published with full particulars in the Revue Agricole. The Commonest insect pests affecting garden and field crops have been noticed as usual. Information respecting their control were given to small planters. Sprayers and insecticides were supplied whenever judged necessary.

## Publications

1. A bulletin was prepared by the Entomologist and Mr. A. Moutia, Scientific Assistant, on the Control of Insect Pests in Mauritius and is in the press.

2. Instructions for Laboratory Work in Zoology, Entomology, Botany and Mycology, by Mr. D. d'Emmerez de Charmoy, E. F. S. Shepherd, W. H. Edwards and A. Moutia were published.

3. A revised and much enlarged edition of Poultry Breeding in Mauritius has been prepared by the Entomologist and will soon be ready for publication.

*Plant Inspection.*—One hundred and thirty five separate inspections of consignments of plants, tubers and fruits were made at the Customs and Parcel Post Office; 291 cases of fruits, 132 bags of seeds, and 290 parcels of tubers and plants were examined.

*Education.*—Lectures on Entomology, Zoology and Animal Husbandry were delivered at the College of Agriculture by the Entomologist, the Scientific Assistant, and after his arrival by Mr. W. H. Edwards.

Researches on poultry diseases have been the object of special attention as in previous years. Leg weakness and Neurosis of Ducks and chickens were specially studied. It appears to be a physiological disease chiefly due to defective diet rather than to a specific micro-organism. Appropriate treatment has proved very effective.

## CHEMICAL DIVISION

The Chemist reports as follows :—

The routine analyses carried out by the division were as follows :—

	Number	Estimations
Limes ... ..	36	39
Waters ... ..	28	121
Dipping solutions...	74	74
Phosphatic manures	16	20
Guano melange ...	40	200
Farmyard manure &c.,	27	75
Saltpetre ... ..	7	14
Sulphate of Ammonia	7	7
Miscellaneous ...	19	55
Canes and Cane juice	1146	2292
Soil moisture determinations..	2100	2100
Total ...	3500	4997

The first of a series of experiments designed to investigate the transformation of nitrogenous manures in Mauritius soils, was completed; a further series of confirmatory experiments on similar lines is now in progress. Further lines of research which have been started include the continuation of the survey of the cultivated soils of Mauritius.



Researches have also been planned to investigate the losses occurring in making Farmyard Manure and the soil point method for determining soil moisture. There has been a great increase in the number of estimations made in the Department Laboratories; unfortunately work was handicapped by the absence of Mr. Giraud, on sick leave for nearly five months.

Delay has also been caused by the reorganization of the Laboratories consequent on the organization of the Agricultural College, the Laboratory in which the Students of the Agricultural College formerly worked having been refitted as the main Chemical Laboratory of the Department.

#### *Educational*

Officers of the Division delivered five lectures a week at the Agricultural College, while in addition student Laboratory periods were supervised by one of the Chemists of the Division.

### BOTANICAL DIVISION

The Botanist reports as follows:—

*Investigations on the physiology of the sugar-cane.*—The investigation in connection with the rates of growth of the sugar cane and the effects of environment were continued at Réduit, Pamplémousses and Médine. The investigation of the transpiration ratio of the sugar cane was continued.

*Sugar Cane selection.*—The progeny plots of R. P. 6 and White Tanna at Médine Experiment Station, planted with "tops" selected in 1923 were reaped. The general stand and the high yields showed promise. A number of the best stools were selected to provide "tops" for planting the second year's progeny plots, according to Shamel's method.

The canes in the progeny plots planted in 1923 at Highlands, Mon Désert and Rich Fund are making good growth, but have not yet been reaped.

*Absorptive capacities of soils for water.*—On account of the extreme variability in the absorptive capacities of different soils for water and the bearing this has on irrigation problems, a series of trials was conducted on the absorbing capacities of the soil of four fields at the Médine Irrigation Experiment Station. The method consists of running water out of a V-Notch at a constant head through a shallow trench in each field and collecting the water at the other end of the trench in a box of known volume the time taken to fill the box in each field being noted.

*Investigations on plant diseases.* Filao (*Casuarina equisetifolia*)—The so-called "Smut disease" with which is associated the fungus *Trichosporium vesiculosum*, has been less prevalent during the year under review than in 1923.

The experimental plots at Les Bouchons were inspected in April, and with the exception of one dying tree, which is not considered to have been the victim of the disease, the trees were found to be healthy.

*Sugar Cane.* (*Saccharum officinarum*)—Mosaic disease was discovered on January 22nd on some stools of the Coimbatore seedlings, Co. 232, Co. 213, and Co. 210, growing in the pépinière at the Central Experiment Station, Réduit. These stools originated from cuttings imported from India in 1923. All the infected canes were immediately uprooted and destroyed and since then, no further outbreaks of Sugar Cane Mosaic disease have been observed or reported in the Colony.

The Botanist and Mycologist spent the months of September and October in Réunion, investigating an alleged outbreak of Sugar Cane Mosaic disease in that Island. As a result it was shown that Mosaic existed on a considerable scale there. The results of the investigation formed the subject of a special report.

As a special precaution against introduction of sugar cane Mosaic into the Colony, it was advised that section 1 of Paragraph 2 of Proclamation 81 of 1913 issued under Ordinance 4 of 1910, Plant Diseases and Pests Regulations be amended. The amendment became law under Proclamation 20 of 1924 issued on May 24th, 1924.

A severe attack of "Smut" (*Ustilago sacchari*) was reported at Beau Vallon Estate (Mahebourg) and control measures advised. A plot of D.K. 74 canes at Médine Irrigation Experiment Station which was suffering badly from Smut attack at the end of 1923 threw off the effects of the disease after the arrival of the rainy season and yielded a normal crop. At the end of the year under review, a slight "Smut" infection existed on the ratoons in this plot, but the canes were receiving their normal supply of water, and were resisting the disease to a high degree.

Early stages of "Top Rot" were observed and the disease arrested at Palmyre Estate by a substantial increase in the rate of irrigation.

Sugar cane stools exhibiting typical root disease were collected at Médine, Réduit, Solitude, St. Martin, Beau Séjour and Britannia. At Médine, *Rhizoctonia* sp., was the only fungus found in association with the dying roots. At Solitude and St. Martin there were respectively undetermined basidiomycetous fungi, and at Réduit a basidiomycetous fungus and nematodes in association with the diseased roots.

At Solitude the disease was apparently aggravated by dry conditions and at Réduit by dryness and other unfavourable conditions. At Beau Séjour, the disease, associated with which was found *Thielaviopsis paradoxa* and *Fusarium* sp., was secondary to attack of *Phytalus Smithi*, and at Britannia secondary to attack of *Oryctes tarandus* (the Gros moutouc).



At Réduit, an experiment was started with a view to determining the effect of applications of Quicklime and molasses to cane stools suffering from root disease.

*Gumming Disease*.—Caused by "*Bacterium vascularum*" was often encountered but not in an epiphytotic form.

*Thielaviopsis paradoxa*.—The cause of the pineapple disease of cuttings was isolated from dying cane stems received from Beau Champ. The attack of the fungus was secondary to that of borers.

*Melanconium sacchari*.—Was isolated from the region of the nodes of the aerial portions and from the rhizomes of the same stalks.

*Fataque (Panicum maximum)*.—A "Smut" was found widespread on this grass at Palmyre. Its identity was not determined.

Amongst other plant diseases examined, or reported, during the year are the following:—

*On Tobacco (Nicotiana tabacum)*.—Mosaic disease—A powdery mildew, leaf spots, (one type of which was undoubtedly caused by *Cercospora nicotianae*) and "root knot" caused by *Heterodera radiculicola*, or other nematodes.

*On Potato (Solanum tuberosum)*.—Blight, caused by *Phytophthora infestans*.

*On Pumpkin (Cucurbita pepo)*.—Mosaic disease.

*On Lucerne (Medicago sativa)*.—"Damping-off" of seedlings caused by *Phythium de Baryanum*.

*On Pistache (Arachis hypogea)*.—Leaf spot caused by *Cercospora personata*. Wilt—caused by *Baccillus solanacearum*.

*Pois Mascate (Mucuna utilis)*.—A reported root disease and blight of this crop at Highlands were found to be caused by attacks of the beetle—*Cratopus* sp. This was brought to the notice of the Entomologist.

*Yam Plants (Dioscorea sp.)*.—At Réduit and Pamplémousses were blighted by a *Glocosporium*.

*Peach (Prunus persica)*.—A serious attack of leaf rust (*Puccinia pruni-spinocae*) associated with a collar canker—in association with which was found a fungus apparently the imperfect stage of *Valsa lancostoma*, existed at Belle Vue, near Albion, on the west coast. Control measures recommended comprised spraying with Bordeaux mixture and excision of the cankers in their early stages of development.

*Palm Trees (Oreodoxa regia)*.—At Pamplémousses were affected with a bud-rot apparently of bacterial origin.

*On Rose bushes (Rosa sp.)*.—At Rose Hill a heavy infestation of a powdery mildew was reported, which disappeared on the approach of the rainy weather.

*On Coffee (Coffea sp.)*.—Rust "*Hemileia vastatrix*" often in association with the *Anthraxnoseæ*, brown blight fungus—*Colletotrichum coffeanum*—was prevalent during the year. *Colletotrichum coffeanum* also damaged the fruits. During the year, arrangements were made with Mr. James Weir, Pathologist, Plant Diseases survey and Pathological collections, Bureau of Plant Industry, United States Department of Agriculture, whereby exchanges of pathological botanical specimens and specimens of tropical fungi would be conducted between his herbarium and that of the Department. Several Pathological specimens have been received from him and local material prepared for despatch in exchange.

*Miscellaneous work* included:—

(a) Examination of samples of diatomaceous earths from Kenya.

(b) Examination of a cotton sample from Rodrigues.

(c) Germination tests on imported onion seed and Tobacco seed.

(d) Inspection of School Gardens with the Chief Agricultural Officer.

(e) Examination of a sample of grain from Beau Champ to determine the presence or otherwise of poisonous weed seeds or the presence or otherwise of poisonous matter in other forms.

(f) Contribution of articles to the "Revue Agricole" de l'Île Maurice.

*Work at the College of Agriculture*.—During the year, the Botanist and Mycologist delivered 38 lectures and supervised 37 laboratory periods in the College of Agriculture.

#### VETERINARY DIVISION

The Government Veterinary Surgeon reports as follows:—

*Importations of animals*.—During the year 64 schooners and steamers have been inspected re: importation of animals in the Colony; the following tables give the number of animals imported:—

##### Imports of live animals (1924)

Madagascar Bullocks	...	...	...	12,873
Cows and Bulls	...	...	...	320
Pigs	...	...	...	1,164
Sheep	...	...	...	799
Goats	...	...	...	3,122
Horses	...	...	...	87
Ponies	...	...	...	159
Mules & Asses	...	...	...	30
Dogs	...	...	...	2



*Stock Farm.*—Animals of the Department have been treated for :—One bull for abscess, one cow died of congestion of the lungs, another died of Pericarditis, four calves died of enteritis and gastro enteritis ; six animals died with symptoms of Arsenic poisoning although all efforts have been made to treat these animals.

*Police Department.*—Animals of the Police Department have been treated for the following :—1 horse for limping, 1 mare for pneumonia, one horse for “frog rot,” one horse for Keratitis, one mule, limping, one horse for wounds and one for colics.

*Medical and Health Department.*—One mule was treated for an abscess of the hoof, 1 mule for limping ; 1 mule was condemned on account of old age ; one bullock was treated for wounds and one for an abscess at Roche Bois. At Curepipe Sanitation 2 bullocks died of Surra, and one as the result of broken shoulder due to an accident. Three were treated for swelling of the neck and withers. One died of Colics, two others were condemned for chronic laminitis.

*Woods and Forests.*—One donkey was treated for limping, one bullock at Chateau d'eau for abscess of the sinus and one donkey for limping.

*Curepipe Dairy.*—Two cows were treated for abscesses, one for hemorrhage of the udder, 2 for pneumonia, one bullock for wounds and one calf for Colics.

*Immigration.*—One donkey was treated for accidental wounds.

#### *Animal Quarantine Station*

The following animals have been quarantined at Fort William Quarantine Station before admittance in the Colony :

Cows	...	...	20
Pigs	...	...	2
Donkeys	...	...	4

The number of dogs under observation in the Government Quarantine Kennel during the year was 7.

#### *Meat Inspection*

Slaughter houses of the Colony were regularly inspected. In two cases seizures were maintained and in one case of illegal slaughtering the meat was seized and forwarded to the Orphanage and the owner of the animal prosecuted. Four farrow heifers and three cows (troupeau de souche) under age were allowed to be slaughtered during the year. Demonstrations were delivered to the Sanitary Staff, on meat inspection at Rose Hill abattoir. The lectures were well attended and proved successful.

#### *Contagious Diseases*

*Surra.*—The systematic examination of animals which has already given good results continued during the year. The principal Stock Inspector was absent on Study leave, but the survey was continued by the Assistant Stock Inspector and during short periods by the 2 Officers in charge of Beetles campaigns ; 5,959 blood smears were taken and examined with the result that 37 cases were detected. Six equines were slaughtered for Surra. Mention should be made of the valuable assistance of the Police Department in relation to the enforcement of the quarantine of the affected animals. The work of the Assistant Stock Inspector was very regular and effective ; during several months this Officer carried on single handed the Surra survey very satisfactorily.

*Epizootic Lymphangitis.*—One case of this disease was detected during the year on a mare. The animal which was incurable, was destroyed.

*Red Water.*—One sub acute case of Red Water was recorded and although “Trypanbleu” was immediately injected the affected cow died the next day. No other outbreak of this disease was detected or reported during the year.

#### *Report of Deaths to the Department*

During 1924, eleven mortalities were reported to the Department, amongst which five occurred in Flacq. A Survey was immediately made in that vicinity and 8 cases of Surra detected in the neighbourhood on animals belonging to carriers. The affected animals were placed under quarantine and treated, immediately. The action taken in this circumstance has certainly located an outbreak of Surra which might otherwise have spread all through this district.

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### STATISTICAL DIVISION

The Statistician reports as follows :—

The Blue Book Statistics relative to Agriculture were supplied to Government. Statistical data were also supplied to the International Institute of Agriculture, Rome ; to the Board of Trade, to the Colonial Secretary's Office, the Immigration Department &c,. Monthly reports on weather and crop conditions were issued ; the usual crop forecasts were prepared and submitted to Government.



The Meteorological service of the Department was continued under the general supervision of the Statistician and results of the observations were reduced and tabulated by him. Observations of temperature, relative humidity and rainfall are taken at the Central Experiment Station, Reduit and at five secondary stations, viz: the Royal Botanical Gardens, Pamplemousses; the Nursery Garden, Curepipe; Abercrombie Nursery, Port Louis; Mahebourg Demonstration plot, Grand Port and Médine Irrigation Experiment Station, Black River; in addition, most Sugar Estates voluntarily contribute rainfall observations. These data are reduced and co-ordinated to assist in the work of crop forecasting and for general investigations on Agricultural problems connected with climatological factors.

The Statistician also acts as Registrar to the Mauritius Agricultural College, and Lecturer in Physics & Applied Mathematics in the same institution. He is Secretary to the Advisory Board of the College and to the Board of Agriculture.

## SUGAR TECHNOLOGICAL DIVISION

The Sugar Technologist reports as follows:—

*Pollution of Rivers by Factory waste waters.*—The study of the causes of river pollution by factory waters started last year in co-operation with the Director of the Bacteriological Laboratory, has been completed and report submitted.

*Cane Selection.*—The improvement of the sugar cane following Shamel's bud selection method is giving promising results. The progeny plots at Highlands and Mont Desert were not harvested this year, the canes having not reached their full development. Some of the plots show superior progenies. The Médine plots were harvested under the control of this Division only, during the absence of the Botanist from the Colony. The 13 best White Tanna stools and the 6 best stools of R. P. 6 were selected and planted in the second year progeny plots. All the cuttings had three nodes but only one bud was left on each, the two others were cut out. This method seems better than that of planting every individual bud, and is recommended by Mr. Shamel.

A mass selection of the White Tanna has been carried out at Rich Fund and a progeny plot planted.

*Visits to Factories and investigations on Estates.*—31 factories were visited before and during the crop, several of them repeatedly and on special request and advice were given in compliance with the request of the Managers and Factory Managers.

The influence of the application of Phosphoric acid, and of heat singly or jointly, to the clairce has been investigated and a great number of samples from Britannia, Mon Desert, Riche-en-Eau and Savannah have been examined. As a preliminary conclusion it may be stated that in factory conditions, the influence of temperature seems more liable to cause inversion than that of active acidity (pH) all other things being equal. This question is rather a delicate and important one, and will need a good deal of supplementary work, for every year the number of factories aiming at the production of a better grade of plantation white sugar, is increasing.

Mr. R. G. W. Farnell, Chemist to the British Empire Sugar Research Association, recently visited the Colouy. During his stay in the Island he was in constant contact with this division. He accompanied the Technologist on many of the latter's visits to the factories. Interesting and valuable observations were made. Mr. Farnell developed and generalized the application of the determination of the Hydrogen Ion concentration in the Factory, which had been started on a restricted scale the previous year and before his arrival this year, by the Technologist.

Research work on the Colloids of Sugar Cane started by Mr. Farnell was continued and will be pushed forward actively in the course of next years.

*Contrôle Mutuel.*—The "Contrôle Mutuel" was successfully carried out, 35 usines having contributed fortnightly during the crop, while returns were regularly distributed amongst the contributors.

*Educational.*—Complete courses of 40 lectures in Sugar Technology and 10 lectures on Sugar Cane cultivation were delivered this year to the third year students and to Sugar Estate Managers, Chemists and Employés from January to June. Regular weekly lectures in Sugar House Chemistry and Chemical control have been delivered to the second year students during the whole year. Practical demonstrations were given in the Laboratory and at Mon Désert Factory.

Practical Laboratory work was performed by Students after the lectures under the supervision of the Technologist. The second and third year students visited in detail several factories during the off season and the workshops of Tardieu & Co., and Les Forges et Fonderies de Maurice, with the Technologist.



## AGRICULTURAL AND EXPERIMENT STATION DIVISION.

The following notes are taken from the reports of the Chief Agricultural Officer and the Agricultural Superintendent.

*Food Settlements.*—About the same area as last year was cultivated at St. Martin, St. Thomas and La Ferme Food Settlements. The number of resident settlers has increased, some of them have erected permanent buildings to replace temporary grass sheds.

Maize and Manioc were the principal crops grown, a smaller area is devoted to the cultivation of sweet potatoes, tobacco, tomatoes and other vegetables. Complaints were often received about damages to plantations by stray cattle. Seventeen oxen were impounded, two pigs and 3 goats were shot.

In order to encourage emulation among the settlers, money prizes were again awarded to the owners of the three best kept plots, both at St. Martin and La Ferme. The following are the names of the prize winners :

At St. Martin			At La Ferme		
A. Coomarasamy...	1st prize of Rs. 30		S. Bhageerat	...1st prize of Rs. 30	
K. Carpen	...2nd „ 25		M. Moonien	...2nd „ 25	
A. Laurent	...3rd „ 10		T. Deehal	...3rd „ 10	

Demonstration plots at St. Martin and at La Ferme were maintained in good order.

The Co-operative Credit Society worked in connection with these Food Settlements was of great assistance to the small planters. Loans amounting to a total of R. 2,555.—were made, they were punctually repaid when due.

*Maize Secherie.*—The Maize Secherie was not operated during the year, owing to the importation of Maize from Madagascar and South Africa. Its transfer to Rodrigues where it would be more useful is under consideration.

*School Gardens.*—Great attention was devoted to School Gardens. Regular visits were paid to them by the Chief Agricultural Officer and his Assistant. A supply of seeds and plants was maintained throughout the year. One garden at Moka was closed as the Head Teacher did not take any interest in it. Applications for registrations of gardens were approved for the “Old Grand Port” R. C. Aided School and the “Brisée Verdière” C of E. Aided School. There are now 18 school gardens in the Colony. Money prizes were awarded to the best kept, as follows, in May 1924, the gardens being judged by the Chief Agricultural Officer and the Botanist :—

1st prize of Rs. 50	to Highlands Road School
2nd „ 40	to Plaisance Orphanage
3rd „ 35	to Rivière des Anguilles
4th „ 30	to Souillac
5th „ 25	to Quatre Bornes
6th „ 20	to Palma

Creditable exhibits from several school gardens were sent to the Flacq Agricultural and Curepipe Horticultural Shows.

*Tobacco Cultivation.*—The issue of permits to cultivate tobacco without payment of tax was resumed on a limited scale during the year. Seed of the Blue Tobacco were distributed free to Growers while visits were also regularly paid to Growers' plantations by Officers in order to give necessary advice.

*Tobacco Factory.*—The operations of the Tobacco Factory were extended this year. Machine-made “Dodo” cigarettes of Mauritius Tobacco were for the first time successfully placed on the market ; a total of 4,271 tins being sold during the year. The Factory worked satisfactorily during the year. The following is a summary of operations :—

Dried leaves received by the Factory	...	7,194	Kilos
Carottes made	...	1,199	„
Number of recarottings made during the year	...	8,606	„
„ carottes worked	...	1,222	„
Raw Tobacco obtained	...	5,893.9	„
Sifted dry tobacco obtained	...	2,829.5	„
Dust and butts	...	1,193.5	„
Sifted tobacco % raw tobacco (Average)	...	48.	
Tobacco delivered for sale	...	2,220.5	Kilos

*Government Dairy.*—The new Dairy Buildings were completed this year ; the Byre comprises accomodation for 52 cows and is fitted with the latest and most modern improvements, while attached to it are the milk room and feed room. Separate buildings were also erected for calves, isolation stable, bull stable etc. The milk from the Dairy has been supplied daily to the Civil and Victoria Hospitals ; 26,618 litres to the former and 17,272 to the latter.

Three cows and three calves died during the year ; 26 calves were born of which 14 were bulls and 12 heifers. In the annexed table is given a record of the yield of milk obtained from 39 cows.







Plots of Kikuyu, Sweet Potatoes etc., were planted for feeding the animals. It is intended considerably to extend plantations of Kikuyu grass; this fodder does fairly well at Curepipe and is superior to the local grasses.

*Royal Botanical Gardens, Pamplemousses—Economic Selection.*—This garden was kept in good condition. Beds were replanted, all lawns regularly mown and swept, lakes, avenues and paths cleaned, hedges trimmed, kiosks repaired etc.

Plants and seeds were sent in exchange to Botanical gardens in other countries. Supplies of plants and seeds were made to Abercrombie Nursery. Many persons visited the Gardens during the year. The compilation of a list of plants growing in the gardens for inclusion in an illustrated handbook of the gardens was completed during the year.

*Curepipe Gardens.*—Great improvements were made at Curepipe gardens. A number of unsightly trees growing in different parts of the gardens were removed. A new section in the vicinity of the Office was cleared levelled and turfed; 14 beds were made and planted with a collection of roses and other ornamental plants; 12 new varieties of ferns were received from South Africa; the principal roads and paths were macadamised. The Educational section was also maintained in good condition.

*Abercrombie Nursery.*—The following improvements have been carried out in this Nursery, viz:— A new potting shed and Toolstore were erected; the Plant shed was repaired and painted; the old Iron shelves were removed and replaced by stone ones; the fence around the Nursery was also renewed.

Sales of plants have increased. Arrangements have been made to raise a large quantity of fruit trees which are in great demand by the public. A consignment of twelve new varieties of Oranges and Mandarin plants were received in good condition from South Africa.

They will be propagated as soon as possible. Below is a list of the plants sold in 1924. The number of plants distributed amounted to 3,554.

#### *Abercrombie Nursery*

##### List of plants sold during the year 1924 :

Allspice ...	10	Mandarine ...	167
Caripoullay ...	20	Mango grafts Alphonse	4
Cinnamon ...	9	„ Aristide...	50
Clove ...	1	„ Auguste...	28
Coffea liberica ...	152	„ Baissac ...	21
„ robusta ...	303	„ Elise ...	1
„ excelsa ...	10	„ Goal'Etang	14
Cola ...	4	„ Jose ...	25
Nutmeg ...	14	„ Luciana...	4
Tobacco Seeds ...	15 grms.	„ Miel ...	14
Mahogany ...	30	„ Roopy ...	3
Dillenia indica (Chalta)	1	„ Rosat ...	13
Anona sp. ...	4	Mango seedlings Maison	
Atemoya ...	12	„ Rouge	39
Avocado ...	18	Mango seedlings Torse	48
Badamier ...	22	Mangoustan (False)	
Bergamotte... ..	26	„ Garcinia sp. ...	2
Bibasse ...	122	Orange budded, Jaffa...	7
Bigarade ...	35	„ Joppa..	2
Bread Fruit... ..	6	„ Magnum	
Bull heart ...	56	„ Bonum	1
Carambole ...	2	„ Michel	
Eugenia sp... ..	8	„ (Gros)	5
Citron ...	106	„ Natal...	5
Coconuts local ...	125	„ Navel..	12
„ Ceylon ...	2	„ Persan	
„ Pemba ...	3	„ brown	3
Eleocarpus ...	13	„ Ruby	
Gooseberry (Ceylon) ...	4	„ blood	16
Grape fruit seedlings... ..	9	„ Victoria	2
„ budded ...	14	„ Wittaker	1
Guava chinese ...	17	Orange seedlings ...	53
„ local... ..	18	Pappaw ...	1
Hog Plum ...	59	Passiflora lauriflora ...	2
Jack fruit ...	12	Peach ...	13
Jambosse ...	25	Pomegranate ...	32
Jujube (Ziziphus) ...	1	Flacourtia ...	14
Lemon Genoa budded... ..	3	Sandoriam indicum ...	1
„ layers... ..	3	Sour sop ...	46
„ Seedlings	665	Sweet sop ...	466
Letchi layers ...	113	Antigonon ...	2
Mabolo (Diospyros) ...	3	Aristolochia ...	2



## List of plants sold during the year 1924—(Continued)

Bignonia creeper (Liane aurôre) ...	4	Palms, Hyophorbe amaricaulis	42
Bougainvillea ...	115	„ Hyophorbe verschaffeltia	4
Canna ...	6	„ Kntia sp. ...	1
Cassia aurea ...	3	„ Latania ...	2
„ fistula ...	11	„ Martinegia caryotifolia...	24
„ Javanica ...	29	„ Oreodoxa regia (Cayenne palm)	8
Croton ...	4	Panæ ...	2
Flamboyant ...	12	Pandanus ...	2
Gliricidia ...	9	Russelia junicea ...	19
Jacaranda ...	7	Sajo (Cycas) ...	3
Lagerstroemia ...	44		
Oleander ...	8		
Palms, Chrysaliidocarpus	16		

N. B.—Are not included, plants supplied to Government Departments.

*Le Réduit Grounds.*—The Grounds were kept in good order. The collection of ornamentals was increased by the addition of a large number of new varieties of Cactus Dahlia. Vegetables were supplied to Government House throughout the year.

The following number of trees were planted in different parts of the domain, viz :—

20,206 Eucalyptus rostrata.
4,125 Pinus sinensis.
250 Araucaria Cuninghamii
1,520 Bassia latifolia.
1,610 Juniperus Bedfordiana.
400 Michelia Champaca.
100 Cinnamomum camphora
160 Terminalia Benjoin
1,000 Casuarina equisetifolia.

TOTAL ... 29,371

84.52 acres of forest plantations were weeded and 12.76 of new land cleared. The following plants were also planted on existing plantations to replace vacancies :—

1,950 Terminalia arjuna
3,400 Eucalyptus rostrata
300 Cinnamomum camphora
1,799 Pinus sinensis

TOTAL ... 7,449

*Flacq Agricultural Show.*—A very successful Agricultural Show was held at Flacq on the 27th July in the buildings of the District Court, the Market and its vicinity, great interest being manifested by the Planters and inhabitants of the District.

*Co-operative Credit Societies.*—The work of the Co-operative Credit Societies is reviewed by the Registrar in a separate Annual Report.

*Experiment Stations at Réduit and Pamplémousses.*

*Cane Experiments.*—The experiments with sugar canes have been continued as in previous years at Réduit, Pamplémousses, Labourdonnais, Long Mountain, Highlands, Britannia and Queen Victoria. From each of these stations canes have been reaped and weighed experimentally and samples of each variety sent to Réduit for crushing and analysis.

New plots of experiments on cane varieties have been established during the year at Réduit, Pamplémousses, Britannia, Highlands and Queen Victoria. Experiments with ploughing, molasses, Sulphate of Ammonia, Guano Phosphaté and Nitrate of Potash were continued at Réduit, Britannia and Hermitage. A certain amount of canes as well as cuttings of variety canes have been sold to planters.

From the seedling canes raised at Pamplémousses during the year 1923 and which were planted in one hole trials, 150 were selected and planted into 6 holes. From the 6 holes trials of 1922 seedlings raised at Pamplémousses 35 were selected and planted into 30 holes; 1798 seedling canes of 1924 were planted in 1 hole trials. The total number of samples of canes crushed in the Experimental Mill at Réduit was 1146, in each case the juice was weighed and sent to the Chemical Division for analysis. The canes reaped at the Central Experiment Station weighing 102.560 tons were sent to Trianon Estate.

Canes reaped at Pamplémousses weighing 54.050 tons were sent to the Mount Estate, and canes reaped at Montagne Longue weighing 4.250 tons sent to Mr. P. Ramphul.



*Experiments with other economic crops.*—Experiments with the following food crops have been continued during the year at Réduit and Pamplémousses.

## REDUIT

Maize—breeding by selection trials		
Sweet Potatoes—trials with 48 varieties		
Eddoes and Tannias	8	”
Yams	12	”
Ground nuts	8	”
Oats and Vetches	2	”

## PAMPLEMOUSSES

Sweet Potatoes—Trials with 48 varieties		
Eddoes and Tannias	6	”
Yams	12	”
Ground nuts	8	”
Tobacco	4	”
Manioc	30	”

A large amount of tubers, vines and cuttings have been distributed among the public. All the Tobacco grown on the Experiment Station was sent to the Government Tobacco Factory.

Seeds of 3 new varieties of Tobacco viz :—Cuban, Connecticut and Zimmer received in 1923 from the Imperial Institute were sown at Pamplémousses at the end of the year (1923) and have given good results. The leaves were reaped experimentally and the results recorded.

An experiment with the following green fodder was established at Réduit and reaped experimentally throughout the year :—

- 1—*Penisetum clandestinum* (Kikuyu)
- 2—*Dactylis glomerata* (Cocksfoot grass)
- 3—*Panicum* sps. (Buffel grass)
- 4—*Penisetum purpureum* (Elephant Grass)
- 5—Purple top.
- 6—*Panicum maximum* (Fataque)
- 7—*Stenotaphrum complanatum* (Herbe bourrique)
- 8—*Medicago sativa* (Lucerne)
- 9—*Paspalum dilatatum*.

*Stock Farm.*—Fair progress has again been made. The following are the births recorded :—

- |   |   |
|---|---|
| 1 | Hissar bull calf,                       |
| 1 | Ongole heifer calf,                     |
| 1 | Mysore heifer calf,                     |
| 2 | Sindhi bull calves,                     |
| 1 | Half breed Sindhi and Jersey bull calf, |
| 1 | Holstein Friesland Heifer calf,         |
| 1 | ” ” Bull calf.                          |

TOTAL... 8

Eleven deaths were recorded. The deaths are as follows :—

- |   |   |
|---|---|
| 1 | Africander cow died of congestion of the lungs                |
| 1 | Sindhi cow died of Pericarditis                               |
| 1 | $\frac{3}{4}$ breed bull Holstein Friesland died of enteritis |
| 1 | Sindhi bull calf died of Diarrhoea                            |
| 1 | Sindhi bull calf died of gastro enteritis.                    |

5

The deaths of 1 halfbreed Sindhi and Jersey bull calf

- |   |                                  |
|---|----------------------------------|
| 1 | Hissar cow,                      |
| 2 | Holstein Friesland heifer calves |
| 1 | Holstein Friesland bull calf     |
| 1 | Jersey cow                       |

are obscure, but it is suspected, may have been due to malicious poisoning.

On the fourteenth day of February a Stock sale took place at which the animals were sold producing a total of Rs. 2,562. While two young heifers were received from the Dairy, 2 Sindhi Bulls and 1 cow were also sent to Rodrigues; 6,249 litres of milk were supplied to Moka Hospital from 1st January to 31st December.

The following bulls were sent on Estates for services during the year :—

Hissar bull	to	Palmar Estate	from	May	to	September.
Sindhi	”	Bel Ombre Estate	”	”		”
Mysore	”	Les Salines B. River	”	”		”
Ongole	”	Pailles (A. Lagesse)	May	to	August.	
Afrikaner	”	La Caroline Estate	from	June	to	September.



The following bull services were recorded at the Stock Farm. This does not include services on Estates :—

Pure breed Friesland bull, Elsenburg, B. Brommel	...	14 services
„ Ongole „ Hathi II ...	...	2 „
„ Hissar „ Amir II ...	...	2 „
„ Mysore „ Nizam II...	...	1 „
„ Sindhi „ Shahbundhur	...	2 „
		21 services

Further successful experiments on the making of ensilage were again carried out during the year ; 4 acres of new pasture were completed during the year and planted with Kikuyu grass ; experiments with tarred floor for cattle shed have also been carried out.

The poultry runs were reconstituted and a rabbitry added to the Farm during the year. Consignments of 27 birds of 6 different breeds and rabbits of the Flemish Giant and Belgian hare breeds were imported from South Africa. Eggs and rabbits were sold to the public.

*Buildings and roads.*—All buildings belonging to the Department are in good condition. The Director's quarters were repaired and repainted and an installation of septic tank was made. The main road through the Station was remetalled.

*Medine Irrigation Experiment Station.*—The irrigation investigations were continued for the 3rd year at Medine, the fields were reaped experimentally and samples sent to the Central Experimental Station for crushing and analysis.

It has been found that there is a minimum amount of water which can be supplied to each field. This minimum is a function of the soil ; that there is no advantage in applying water over and above the minimum quantity which a field can take. The best results are obtained by giving the minimum quantity of water at weekly intervals throughout growth ; forking the canes in the interlines has increased the yields, while in virgins, raking the land after watering is advantageous.

The yield of the Experiment Station was very satisfactory, and 324.760 tons of canes were sent to Médine Factory.

*Sisal plantations and Fibre Factory.*—In January it was decided to transfer the Corona Fibre Factory from Médine to Plaine Lauzun, certain existing buildings in the middle of the plantation of Sisal being utilised to house it ; the erection of the machine was completed in July, the operations of cleaning Fibre commenced on the 7th of August and terminated on September 3rd. During this period leaves from 18.81 acres of sisal were decorticated. The actual total weight of leaves obtained was 206.6 tons or 11.0 tons per acre.

The total weight of wet fibre was 12,690 tons equal to 4.640 tons of dry fibre i.e., a percentage yield of 2.24% , a very low figure.

The machine worked very well on the whole.

The produce contained in 20 bales was shipped on 19.11.24 by S.S. "Gaika."

The plantation of Sisal at Plaine Lauzun was kept in good condition, the grass in the interlines was cut and converted into hay for use as fodder and litter at the Dairy.

The plantation supplied once more after the reaping had been completed ; new reaping will probably be made in May or June next.

#### BOARD OF AGRICULTURE

The Board of Agriculture established under Ordinance 30 of 1912 consists of :—

His Excellency, the Governor, President.

The Director of Agriculture, Vice-President.

The following members were appointed for 1924 :—

Honourable G. Antelme,	Messrs. M. Lagesse,
„ J. A. Duclos, C.M.G.,	„ F. N. Langlois,
„ M. Martin,	„ F. A. Nichols,
„ L. Noel,	„ G. Regnard,
„ M. d'Unienville,	„ E. Rouillard,
Messrs. G. Clarenc,	„ J. de Spéville,
„ H. G. Ducray,	„ J. J. Gibson,
„ L. H. de Froberville,	Pundit Boleram Mookteram.
„ A. Hugnin,	

In 1924 there were 4 meetings of the Board held on June 6th, August 6th, December 19th and December 31st respectively. At the first of these meetings which took place on June 6th, the following papers were laid before the Board :—

Bulletin No. 28 General Series,

„ No. 29 General Series,

„ No. 9 Scientific Series,

Report on Phytalus Destruction 1922-23.

Factory figures, crop 1923-24.

Preliminary forecast, crop 1924-25.

and the following questions were discussed :—

1. Tobacco Industry.
2. Quarantine for dogs,
3. Truss wheels,
4. Agricultural Show.



*Meeting of August 6th.*—The following questions were discussed by the Board :—

1. Proposed visit of Mycologist to Reunion in connection with Mosaic Disease.
2. Draft of new Animal Prevention Ordinance.
3. Report on Flacq Agricultural Show.
4. Results of experiments with Sugar Cane.

*Meeting of December 19th.*—The following papers were laid before the Board :—

- Annual Report of the Department of Agriculture for 1923.
- Report on Co-Operative Credit Societies for 1923-24.
- Prospectus and Syllabus of the Mauritius Agricultural College for 1924-25.
- Final crop forecast for 1924-25.

and the following questions were discussed :—

1. Report on Phytalus Campaign 1923-24.
2. Botanist report on Mosaic Disease in Reunion.

*Meeting of December 31st.*—The following questions were discussed by the Board :—

1. New Insecticide to be tried against Phytalus Smithi.
2. Mosaic Disease.
3. Projected experiments with storage of fumier.

### PUBLICATIONS

The following reports and memoranda were prepared and submitted to the Council of Government and to the Board of Agriculture :—

- Report on Co-operative Credit Societies 1923-24.
- Report on operations against Phytalus Smithi 1923-24.
- Preliminary forecast of the 1924-25 Sugar Crop.
- Final forecast of the 1924-25 Sugar Crop.

### LEGISLATION

The following Ordinances, Proclamations and Notification relative to Agriculture were issued during the year :—

Ordinance No. 6 of 1924 to extend to Rodrigues Ordinance No. 4 of 1913 and rules made thereunder.

Ordinance No. 11 of 1924 to amend the Labour Ordinance of 1922.

Ordinance No. 23 of 1924 to amend the Animal Diseases Ordinance, 1915.

Proclamation No. 20 of 1924 to amend Proclamation No. 81 of 1913. Importation of Plants.

Government Notification No. 206 of 11.8.24 re. Regulations amending Registration of Agricultural Chemists.

### EXPENDITURE AND RECEIPTS

The Expenditure of the Department has been as follows :—

	Rs.	c.
Personal Emoluments ... ..	79,708.38	
Maintenance of Gardens ... ..	16,077.22	
General Services ... ..	2,224.35	
Prevention of Plant Pests and Diseases ... ..	2,939.37	
Prevention of Animal Diseases ... ..	3,762.48	
Upkeep of Stock ... ..	9,633.69	
Establishment of Demonstration plots ... ..	1,274.97	
Subvention to Société Horticole ... ..	1,000.00	
Travelling Expenses ... ..	9,658.93	
Miscellaneous expenses Co-Operative Credit Societies ... ..	60.50	
Maintenance of Food Plantations ... ..	2,527.14	
Maintenance of Experiment Stations ... ..	13,877.55	
Minor Industries ... ..	31,160.95	
Apparatus and Chemicals ... ..	6,529.80	
Nursery for economic plants ... ..	2,101.41	
Registration of Chemists Examination ... ..	47.10	
Destruction of Phytalus Smithi ... ..	41,961.91	
Experimental Station for Irrigation of canes ... ..	12,302.26	
Upkeep of plantation at Floréal ... ..	469.63	
Dairy { Capital Expenditure ... ..	26,955.52	
{ Upkeep Expenses... ..	21,833.29	
Agricultural Shows ... ..	586.94	
Repairs to roads C.E.S. ... ..	499.00	
Importation of cattle ... ..	1,913.37	
Extra pasturage for Stock Farm ... ..	596.50	
Duplicator ... ..	425.11	
Importation of Poultry ... ..	1,568.74	
Services rendered by the Railways ... ..	16,840.35	
Purchase of raw Tobacco ... ..	6,617.24	
Total ... ..	315,153.70	



The receipts were—		Rs.	c.
Sale of flowers and plants	...	3,587.11	
Sale of Stock	...	2,585.34	
Services of animals	...	53.00	
Sale of eggs and poultry	...	487.51	
Sale of milk, Cattle Station	...	2,563.70	
Sale of canes	...	12,580.79	
Analytical fees	...	576.50	
Miscellaneous	...	610.05	
Rent of Tea Plantation	...	1,155.00	
Sale of Tobacco	...	16,834.85	
Contribution C.C.S.	...	2,354.00	
Veterinary fees (Customs)	...	1,568.00	
Destruction of <i>Phytalus Smithi</i> (Customs)	...	36,548.45	
Loans repaid by Co-Operative Credit Societies	...	4,585.00	
Interest on loans	...	719.76	
Rent of Crown Lands at La Ferme and St. Martin	...	332.00	
Sale of produce, Experimental Dairy	...	18,451.60	
Total		105,592.66	

## GENERAL

The Director of Agriculture continued to serve as a nominated Member of the Council of Government. He also served as a member of the Royal Committee, of the River Pollution Commission and of Forest Board. He acted as Chairman of the local Sub-Committee for the British Empire Exhibition, of the Agricultural College Board and of the special Committee to report on the Fibre Industry. The Assistant Director continued to serve as a member of the Board and Treasurer of the Mauritius Institute.

The Director of Agriculture was called on to report on the fitness of the Royal College and Agricultural College Buildings for holding degree examinations in Science of London University. The Director of Agriculture and the Botanist were appointed to supervise the holding of the London University Intermediate Arts and Science Examination in July.

Examination for the Registration of Agricultural Chemists were held in July; the examiners being the Director of Agriculture and Messrs. R. E. Vaughan, B.Sc., A.I.C., L. Giraud and J. Manès. Three candidates presented themselves of which all passed.

April 20th, 1924.

H. TEMPANY,  
Director of Agriculture.







